# ACTA PHYSIOLOGICA SCANDINAVICA


REDACTORES

K. HARTIALA, ÅBO — F. BUCHTHAL, KØBENHAVN — R. NICOLAYSEN, OSLO

Y. ZOTTERMAN, STOCKHOLM — U. S. VON EULER, (EDITOR) STOCKHOLM

COLLABORANTES

ÅGREN, G. (Uppsala), ANDERSEN, H.T. (Oslo), ANDERSSON, B. (Stockholm), BÁRÁNY, E. (Uppsala), BERGSTRÖM, S. (Stockholm), BERNHARD, C. G. (Stockholm), BJURSTEDT, H. (Stockholm), BLIX, G. (Uppsala), BORGSTRÖM, B. (Lund), CARLSSON, A. (Göteborg), CARLSTEN, A. (Göteborg), DAM, H. (København), EGE, R. (København), VON EULER, C. (Stockholm), FÄNGE, R. (Göteborg), FOLKOW, B. (Göteborg), FÖLLING, A. (Oslo), FRANKENHAEUSER, B. (Stockholm), GOLDBERG, L. (Stockholm), GRANIT, R. (Stockholm), HESSER, C. M. (Stockholm), HOHWÜ-CHRISTENSEN, E. (Stockholm), HÖKFELT, B. (Malmö), HOLLUNGER, G. (Umeå), HOLM-JENSEN, I. (Århus) JORPES, E. (Stockholm), LANDGREN, S. (Umeå), LEEGAARD, F. (Oslo), LEHMANN, J. (Göteborg), LINDERHOLM, H. (Umeå), LUNDBERG, A. (Göteborg), LUNDHOLM, L. (Göteborg), MELLANDER, O. (Göteborg), MELLANDER, S. (Lund), MOLLAND, J. (Oslo), MØLLER, K. (København), NIELSEN, M. (København), OTTOSON, D. (Stockholm), PAUL, K.G. (Umeå), REENPÄÄ, Y. (Helsinki), REHBERG, P. B. (København), REICHARD, P. A. (Stockholm), ROSELL, S. (Stockholm), SCHMITERLÖW, C. G. (Stockholm), SCHÖNHEYDER, F. (Århus), SJÖBERG, K. (Stockholm), SJÖSTRAND, T. (Stockholm), SKOGLUND, C. R. (Stockholm), STRÖM, G. (Uppsala), TEORELL, T. (Uppsala), THEORELL, H. (Stockholm), THESLEFF, S. (Lund), USSING, H. (København), UVNÄS, B. (Stockholm), VARTIAINEN, A. V. (Helsinki), VIRTANEN, A. I. (Helsinki), WALAAS, O. (Oslo), WAALER, B. A. (Oslo), WESTERLUND, A. (Uppsala), WRETLIND, A. (Stockholm).



ACTA PHYSIOL. SCAND.

VOL. 77

QP1
A18
v.77
1969

# Vol. 77. INDEX

## Fasc. 1—2. (September—October 1969)

Temperature Dependence of Cholinesterase and Lactate Dehydrogenase in the Guinea-Pig, Hedgehog and Codfish. By B. W. Johansson ..... 1
Pulmonary Function and G-Stress during Inhalation of 100 % Oxygen. By P.-O. Barr, J. Brismar and G. Rosenhamer ..... 7
Effect of Reflexes of Somatic Afferents on the Adrenergic Outflow to the Stomach in the Cat. By G. Jansson ..... 17
Catechol and Indole Derivatives in a Transplantable Islet-Cell Tumour of the Golden Hamster. By L. Cegrell, B. Falck and A.-M. Rosengren ..... 23
Determination of Inulin, Albumin and Erythrocyte Spaces in the Bone Marrow of Rabbits. By K. Michelsen ..... 28
The Evolution of Vascular Smooth Muscle Responses to Histamine and 5-Hydroxytryptamine. II Appearance of inhibitory actions of 5-hydroxytryptamine in amphibians. By O. B. Reite ..... 36
Hemodynamics in the Bone Marrow of Anemic Rabbits with Increased Hematopoiesis. By K. Michelsen ..... 52
Conditional Reflex Activation of the Sympathetic Cholinergic Vasodilator Nerves in the Dog. By P. Bolme and J. Novotný ..... 58
The Firing Pattern of Dorsal Spinocerebellar Tract Neurones during Inhibition. By J. K. S. Jansen, K. Nicolaysen and L. Walløe ..... 68
The Effect of Aldosterone *in vitro* on the Active Sodium Transport and Moulting of the Frog Skin. By R. Nielsen ..... 85
The Heat Regulation of the Human Body. By L. Pedersen ..... 95
Reciprocal Control of Spontaneous Activity and Reflex Effects in Static and Dynamic Flexor $\gamma$-motoneurones Revealed by an Injection of DOPA. By J. Bergmans and S. Grillner ..... 106
Properties of Clarke's Column Neurones. By E. Eide, L. Fedina, J. Jansen, A. Lundberg and L. Vyklický ..... 125
Unitary Components in the Activation of Clarke's Column Neurones. By E. Eide, L. Fedina, J. Jansen, A. Lundberg and L. Vyklický ..... 145
A Dorso-lateral Spinal Pathway Mediating Information from the Mesencephalon to Dynamic Fusimotor Neurones. By B. Appelberg and T. Jeneskog ..... 159
Elicitation of Reflex Vagal Relaxation of the Stomach from Pharynx and Esophagus in the Cat. By H. Abrahamsson and G. Jansson ..... 172
The Effect of Marked Hyperventilation upon Tissue Levels of NADH, Lactate, Pyruvate, Phosphocreatine, and Adenosine Phosphates of Rat Brain. By L. Granholm, L. Lukjanova and B. K. Siesjö ..... 179
Changes in the Activity of Isolated Vascular Smooth Muscle in Response to Reduced Osmolarity. By O. Jonsson ..... 191
Changes in the Cell Volume of Isolated Vascular Smooth Muscle in Response to Reduced Osmolarity. By O. Jonsson ..... 201
Local Transmitter Concentrations in Vascular Smooth Muscle during Vasoconstrictor Nerve Activity. By B. Ljung ..... 212
Hyperosmolality and Vasodilatation in Human Skeletal Muscle. By J. Lundvall, S. Mellander and T. White ..... 224
Reflex Responses Induces by Stimulation of Hypoglossal Afferents. By Chr. Lindquist and A. Mårtensson ..... 234
The Effect of Acetazolamide upon Tissue Concentrations of Bicarbonate, Lactate, and Pyruvate in the Rat Brain. By Å. Kjällquist, M. Nardini and B. K. Siesjö ..... 241
The Accumulation of Albumin-$^{125}$I and Thyroxine-$^{131}$I in Wounds. By H. Funch-Rosenberg, H. J. M. Hansen and E. Moltke ..... 252

## Fasc. 3. (November 1969)

Effects of Puromycin and Luteinizing Hormone on the Uptake of 3-0-Methylglucose by the Isolated Rat Ovary. By K. AHRÉN and L. HAMBERGER ..... 257
The Mechanism of the Increased Maximum Work Performance of Small Muscle Groups Resulting from "Diverting Work" with Other Muscle Groups. By J. S. ALPERT ..... 261
Nature and Localization of the Sodium Pool during Active Transport in the Isolated Frog Skin. By K. ZERAHN ..... 272
Permeability Characteristics of Vascular Smooth Muscle Cells as Revealed by Their Osmotic Responses to Non-Electrolytes. By B. JOHANSSON ..... 282
Effects of Some Metabolic Co-Factors and Inhibitors on Transmitter Release and Uptake in Isolated Adrenergic Nerve Granules. By U. S. v. EULER and F. LISHAJKO ..... 298
Effect of Acid in the Duodenal Bulb on Gastric Secretory Responses to Sham Feeding. By G. NILSSON ..... 308
Demonstration of Adrenergic Receptor Function and Innervation in the Ductus Arteriosus of the Human Fetus. By L. O. BORÉUS, T. MALMFORS, D. M. MCMURPHY and L. OLSON ..... 316
Uptake and Distribution of Rubidium-86 and Potassium-43 in Mice and Rats—an Autoradiographic Study. By K. Å. OLSSON, R. SÖREMARK and K. R. WING ..... 322
Oxygen Uptake in Skeletal Muscle of the Anesthetized Dog during Sympathetic Vasodilatation. By P. BOLME and J. NOVOTNÝ ..... 333
Subcellular Distribution of $^3$H-noradrenaline in Adrenergic Nerves of Mouse Atrium—Effect of Reserpine, Monoamine Oxidase and Tyrosine Hydroxylase Inhibition. By G. JONSSON and CH. SACHS ..... 344
Effects of Slow Infusions of KCl into the 3rd Brain Ventricle. By K. OLSSON ..... 358
The Effect of Gastric Juice Extracts on Histamine as a Gastric Secretory Stimulant. By L. S. SEMB ..... 365
Studies on the Relaxing Actions Mediated by Stimulation of Adrenergic α-and β-Receptors in Taenia Coli of the Rabbit and Guinea Pig. By R. ANDERSSON and E. MOHME-LUNDHOLM ..... 372

## Fasc. 4. (December 1969)

Effects of Gastric and Jejunal Juice Extracts on Gastric Acid Secretion. By L. S. SEMB 385
Structure and Function of the Tactile Hair Receptors on the Cat's Foreleg. By B. Y. NILSSON ..... 396
Hair Discs and Pacinian Corpuscles Functionally Associated with the Carpal Tactile Hairs in the Cat. By B. Y. NILSSON ..... 417
Renal Function in Man during Transition from Hydropenia to Water Diuresis with Superimposed Mannitol Load. By A. APERIA, O. BROBERGER, N. O. ERICSSON and H. FEYCHTING ..... 429
Respiratory Sensitivity to Acute Hypoxia in Goat Kids Born at High Altitude. By A. H. MINES and S. C. SØRENSEN ..... 439
The Unresponsiveness of Lipid Metabolism in Canine Mesenteric Adipose Tissue to Biogenic Amines and to Sympathetic Nerve Stimulation. By K. BALLARD and S. ROSELL 442
Mast Cells and 5-HT. Intracellular Release of 5-Hydroxytryptamine (5-HT) from Storage Granules during Anaphylaxis or Treatment with Compound 48/80. By S.-A. CARLSSON and M. RITZÉN ..... 449
Studies on Central Regulation of Secretion of Antidiuretic Hormone (ADH) in the Goat. By K. OLSSON ..... 465

Histochemical Characterization of a Tryptamine-Like Substance Stored in Cells of the Mammalian Adenohypophysis. By A. Björklund and B. Falck ..... 475
The Influence of DOPA on the Static and the Dynamic Fusimotor Activity to the Triceps Surae of the Spinal Cat. By S. Grillner ..... 499
Inhibitory Action of Prostaglandins $E_1$ and $E_2$ on the Neuromuscular Transmission in the Guinea Pig. Vas Deferens. By U. S. v. Euler and F. Lishajko ..... 510

Supplementum 327. Supraspinal and Segmental Control of Static and Dynamic $\gamma$-Motoneurones in the Cat. By S. Grillner.
Supplementum 328. Effect of Physical Training on Oxygen Transport System in Man. By B. Ekblom
Supplementum 329. Electron Microscopic and Histochemical Observations on the Supraoptic Nucleus of Normal and Dehydrated Rats. By L. Rechardt.
Supplementum 330. XIII Scandinavian Congress of Physiology. Göteborg. 1969.
Supplementum 331. Quantitative Morphological Changes in Some Spinal Cord Segments during Postnatal Development. By *A. Mellström* and *S. Skoglund*.

# INDEX AUCTORUM


Abrahamsson, H. and G. Jansson, Reflex Vagal Relaxation of the Stomach ..... 172
Ahrén, K. and L. Hamberger, Ovarian Transport of Monosaccharides ..... 257
Alpert, J. S., Increased Maximum Work Performance ..... 261
Andersson, R. and E. Mohme-Lundholm, Adrenergic Receptors in Taenia Coli ..... 372
Aperia, A., O. Broberger, N. O. Ericsson and H. Feychting, Water Diuresis in Man 429
Appelberg, B. and T. Jeneskog, Control of Dynamic Fusimotor Neurones ..... 159
Ballard, K. and S. Rosell, Mesenteric Adipose Tissue ..... 442
Barr, P.-O., J. Brismar and G. Rosenhamer, G-Stress and Oxygen Breathing ..... 7
Bergmans, J. and S. Grillner, Reciprocal Fusimotor Control ..... 106
Björklund, A. and B. Falck, Tryptamine-Like Substance in Pituitary Cells ..... 475
Bolme, P. and J. Novotný, Muscle Vasodilation as Conditional Reflex ..... 58
Bolme, P. and J. Novotný, Sympathetic Vasodilatation and Oxygen Uptake ..... 333
Boréus, L. O., T. Malmfors, D. M. McMurphy and L. Olson, Adrenergic Nerves in Ductus Arteriosus ..... 316
Brismar, J., P.-O. Barr and G. Rosenhamer, G-Stress and Oxygen Breathing ..... 7
Broberger, O., A. Aperia, N. O. Ericsson and H. Feychting, Water Diuresis in Man 429
Carlsson, S.-A. and M. Ritzén, Mode of 5-HT Release from Mast Cells ..... 449
Cegrell, L., B. Falck and A.-M. Rosengren, Catechol Derivatives in Islet Cell Tumour 23
Eide, E., L. Fedina, J. Jansen, A. Lundberg and L. Vyklický, Clarke's Column Neurones ..... 125
Eide, E., L. Fedina, J. Jansen, A. Lundberg and L. Vyklický, Unitary EPSP's in DSCT Cells ..... 145
Ericsson, N. O., A. Aperia, O. Broberger and H. Feychting, Water Diuresis in Man 429
Euler, U. S. v. and P. Hedqvist, $PGE_1$ on Neuromuscular Transmission ..... 510
Euler, U. S. v. and F. Lishajko, Metabolic Inhibitors on Nerve Granules ..... 298
Falck, B. and A. Björklund, Tryptamine-Like Substance in Pituitary Cells ..... 475
Falck, B., L. Cegrell and A.-M. Rosengren, Catechol Derivatives in Islet Cell Tumour 23
Fedina, L., E. Eide, J. Jansen, A. Lundberg and L. Vyklický, Clarke's Column Neurones ..... 125
Fedina, L., E. Eide, J. Jansen, A. Lundberg and L. Vyklický, Unitary EPSP's in DSCT Cells ..... 145
Feychting, H., A. Aperia, O. Broberger and N. O. Ericsson, Water Diuresis in Man 429
Funch-Rosenberg, H., H. J. M. Hansen and E. Moltke, Accumulation of Albumin and Thyroxine in Wounds ..... 252
Granholm, L., L. Lukjanova and B. K. Siesjö, Brain Redox State during Hyperventilation ..... 179
Grillner, S., Fusimotor Activity to the Triceps Surae ..... 490
Grillner, S. and J. Bergmans, Reciprocal Fusimotor Control ..... 106
Hamberger, L. and K. Ahrén, Ovarian Transport of Monosaccharides ..... 257
Hansen, H. J. M., H. Funch-Rosenberg and E. Moltke, Accumulation of Albumin and Thyroxine in Wounds ..... 252
Hedqvist, P. and U. S. v. Euler, $PGE_1$ on Neuromuscular Transmission ..... 510
Jansen, J. K. S., K. Nicolaysen and L. Walløe, Inhibition and Neuronal Firing Pattern ..... 68
Jansen, J., E. Eide, L. Fedina, A. Lundberg and L. Vyklický, Clarke's Column Neurones ..... 125
Jansen, J., E. Eide, L. Fedina, A. Lundberg and L. Vyklický, Unitary EPSP's in DSCT Cells ..... 145

JANSSON, G., Adrenergic Control of Gastric Motility ..... 17
JANSSON, G. and H. ABRAHAMSSON, Reflex Vagal Relaxation of the Stomach ..... 172
JENESKOG, T. and B. APPELBERG, Control of Dynamic Fusimotor Neurones ..... 159
JOHANSSON, B., Membrane Permeability of Smooth Muscle ..... 282
JOHANSSON, B. W., Temperature Dependence of Cholinesterase ..... 1
JONSSON, G. and CH. SACHS, Subcellular Distribution of $^3$H-Noradrenaline ..... 344
JONSSON, O., Activity Changes at Lowered Osmolarity ..... 191
JONSSON, O., Hypotonicity and Vascular Smooth Muscle ..... 201
KJÄLLQUIST, Å., M. NARDINI and B. K. SIESJÖ, Brain Acid-Base Changes after Diamox 241
LINDQUIST, CHR. and A. MÅRTENSSON, Hypoglossal Afferents ..... 234
LISHAJKO, F. and U. S. v. EULER, Metabolic Inhibitors on Nerve Granules ..... 298
LJUNG, B., NA Levels during Vasomotor Nerve Activity ..... 212
LUKJANOVA, L., L. GRANHOLM and B. K. SIESJÖ, Brain Redox State during Hyperventilation ..... 179
LUNDBERG, A., E. EIDE, L. FEDINA, J. JANSEN and L. VYKLICKÝ, Clarke's Column Neurones ..... 125
LUNDBERG, A., E. EIDE, L. FEDINA, J. JANSEN and L. VYKLICKÝ, Unitary EPSP's in DSCT Cells ..... 145
LUNDVALL, J., S. MELLANDER and T. WHITE, Hyperosmolality and Exercise Hyperemia in Man ..... 224
MCMURPHY, D. M., L. O. BORÉUS, T. MALMFORS and L. OLSON, Adrenergic Nerves in Ductus Arteriosus ..... 316
MALMFORS, T., L. O. BORÉUS, D. M. MCMURPHY and L. OLSON, Adrenergic Nerves in Ductus Arteriosus ..... 316
MÅRTENSSON, A. and CHR. LINDQUIST, Hypoglossal Afferents ..... 234
MELLANDER, S., J. LUNDVALL and T. WHITE, Hyperosmolality and Exercise Hyperemia in Man ..... 224
MICHELSEN, K., Space Determinations in Bone Marrow ..... 28
MICHELSEN, K., Bone Marrow Hemodynamics in Anemia ..... 52
MINES, A. H. and S. C. SÖRENSEN, Respiratory Sensitivity to Acute Hypoxia ..... 439
MOHME-LUNDHOLM, E. and R. ANDERSSON, Adrenergic Receptors in Taenia Coli ..... 372
MOLTKE, E., H. FUNCH-ROSENBERG and H. J. M. HANSEN, Accumulation of Albumin and Thyroxine in Wounds ..... 252
NARDINI, M., Å. KJÄLLQUIST and B. K. SIESJÖ, Brain Acid-Base Changes after Diamox 241
NICOLAYSEN, K., J. K. S. JANSEN and L. WALLØE, Inhibition and Neuronal Firing Pattern 68
NIELSEN, R., The Effect of Aldosterone on the Frog Skin ..... 85
NILSSON, B. Y., Tactile Hair Receptors ..... 396
NILSSON, B. Y., Hair Discs and Pacinian Corpuscles ..... 417
NILSSON, G., Duodenal Inhibition of Gastric Acid Secretion ..... 308
NOVOTNÝ, J. and P. BOLME, Muscle Vasodilatation as Conditional Reflex ..... 58
NOVOTNÝ, J. and P. BOLME, Sympathetic Vasodilatation and Oxygen Uptake ..... 333
OLSSON, K., Intraventricular KCL-Infusion ..... 358
OLSSON, K., Regulation of ADH Secretion ..... 465
OLSSON, K. Å., R. SÖREMARK and K. R. WING, Distribution of Rubidium-86 and Potassium-43 ..... 322
OLSON, L., L. O. BORÉUS, T. MALMFORS and D. M. MCMURPHY, Adrenergic Nerves in Ductus Arteriosus ..... 316
PEDERSEN, L., Heat Regulation in Man ..... 95
REITE, O. B., Pharmacological Evolution of Smooth Muscle ..... 36
RITZÉN, M. and S.-A. CARLSSON, Mode of 5-HT Release from Mast Cells ..... 449
ROSELL, S. and K. BALLARD, Mesenteric Adipose Tissue ..... 442

ROSENHAMER, G., P.-O. BARR and J. BRISMAR, G-Stress and Oxygen Breathing ..... 7
ROSENGREN, A.-M., L. CEGRELL and B. FALCK, Catechol Derivatives in Islet Cell Tumour 23
SACHS, CH. and G. JONSSON, Subcellular Distribution of $^{3}$H-Noradrenaline ..... 344
SEMB, L. S., Gastric Juice Secretion ..... 365
SEMB, L. S., Gastric and Jejunal Juice Extracts ..... 385
SIESJÖ, B. K., L. GRANHOLM and L. LUKJANOVA, Brain Redox State during Hyperventilation ..... 179
SIESJÖ, B. K., Å. KJÄLLQUIST and M. NARDINI, Brain Acid-Base Changes after Diamox 241
SÖREMARK, R., K. Å. OLSSON and K. R. WING, Distribution of Rubidium-86 and Potassium-43 ..... 322
SØRENSEN, S. C. and A. H. MINES, Respiratory Sensitivity to Acute Hypoxia ..... 439
WALLØE, L., J. K. S. JANSEN and K. NICOLAYSEN, Inhibition and Neuronal Firing Pattern 68
WHITE, T., J. LUNDVALL and S. MELLANDER, Hyperosmolality and Exercise Hyperemia in Man ..... 224
WING, K. R., K. Å. OLSSON and R. SÖREMARK, Distribution of Rubidium-86 and Potassium-43 ..... 322
VYKLICKÝ, L., E. EIDE, L. FEDINA, J. JANSEN and A. LUNDBERG, Clarke's Column Neurones ..... 125
VYKLICKÝ, L., E. EIDE, L. FEDINA, J. JANSEN and A. LUNDBERG, Unitary EPSP's in DSCT Cells ..... 145
ZERAHN, K., NA-Pool in Frog Skin ..... 272

KUNGL. BOKTR. STHLM 1969